Notice No.5

Rules and Regulations for the Classification of Naval Ships, January 2020

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: December 2020

Amendments to	Effective date	IACS/IMO implementation (if applicable)
Volume 2, Part 3, Chapter 2, Section 4	1 January 2021	NA
Volume 2, Part 9, Chapter 9, Section 5 & 6	1 January 2021	N/A
Volume 2, Part 12, Chapter 1, Section 10	1 January 2021	N/A

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Volume 2, Part 3, Chapter 2,
Shafting Systems

■ *Section 4*
Design and construction

4.4 Screwshafts and tube shafts

4.4.1 Screwshafts and tube shafts, (i.e. the shaft which passes through the sterntube, but does not carry the propeller), made from carbon manganese steel ~~are to be protected by a continuous bronze liner, where exposed to sea water.~~, and that are exposed to seawater, are to be protected by a continuous liner composed of bronze or another corrosion resistant material. ~~-~~Alternatively, the liner may be omitted provided the shaft is arranged to run in an oil lubricated bush with an approved oil sealing gland at the after end. Lengths of shafting between sterntubes and brackets, which are readily visible when the ship is in dry dock, may be protected by coatings of an approved type. Special consideration is to be given to liners composed of two or more parts (non-continuous).

4.5 Hollow shafts

4.5.3 The design of hollow shaft arrangements is to be considered for the potential passage of water between and into watertight compartments. The effectiveness of any sealing or closing arrangement, which may be designed to be used in an emergency, is to be demonstrated to at least the maximum head of water imposed by the vertical limit of watertight integrity (*Vol. 1, Pt. 3, Ch. 2, 1.3 Watertight and weathertight integrity*).

4.20 Shaft seals in watertight bulkheads

4.20.1 Where a shaft seal is included in a watertight bulkhead, the design is to be capable of incorporating the maximum bulkhead deflection limits in the axial and radial directions as defined in *Vol 1. Pt 6, Ch 3, Sec 3, NS1 scantling determination* and *Vol 1, Pt 6, Ch 3, 4 NS2 and NS3 scantling determination*.

4.20.2 When the design of the shaft seal is not able to incorporate the stated bulkhead deflection limits described in *Vol 2, Pt 3, Ch 2, 4.20 Shaft seals in watertight bulkheads 4.20.1*, then the bulkhead design is to limit the deflection to the seal manufacturer's stated tolerance as per *Vol 1, Pt 6, Ch 3, 9.1 General 9.1.9* ~~is to be considered~~.

4.21 Shaft grounding device

4.21.1 Where cathodic protection (CP) is utilised, a suitable shaft grounding device is to be included to prevent the shaft from becoming electrically isolated from the ship's hull. A shaft potential monitoring device is to be included.

4.21.2 Shaft to hull voltages are to be monitored and recorded at regular intervals. An alarm is to be provided at the main machinery control station when the maximum allowable shaft to hull voltage is exceeded.

Volume 2, Part 9, Chapter 9
Fire Safety and Ship Safety Systems

■ *Section 5*
Fire safety systems

Existing sub-Section 5.9 has been relocated to Sub-Section 6.1.

Existing sub-Section 5.10 has been relocated to Sub-Section 6.2.

■ *Section 6*
Ship safety systems

6.1 Watertight doors and hatches

6.1.1 The electrical power required for power-operated sliding watertight doors is to be separate from any other power circuit and supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the vertical limit of watertight integrity. The associated control, indication and alarm circuits are to be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the vertical limit of watertight integrity and be capable of being automatically supplied by the transitional source of emergency electrical power required by *Vol 2, Pt 9, Ch 2, 5.2 Emergency source of electrical power 5.2.6* in the event of failure of either the main or emergency source of electrical power.

6.1.2 Watertight doors actuated by electric motors are to be capable of being automatically supplied from the transitional source of emergency electrical power or be provided with an independent temporary source of stored energy.

6.1.3 A single failure in the power operating or control system of power-operated sliding watertight doors shall not result in a closed door opening or prevent the hand operation of any door.

6.1.4 Availability of the power supply is to be continuously monitored at a point in the electrical circuit adjacent to the door operating equipment, including hydraulic power units where applicable. Loss of any such power supply is to activate an audible and visual alarm at the navigating bridge and main machinery control station.

6.1.5 Electrical power, control, indication and alarm circuits are to be protected against fault in such a way that a failure in one door circuit will not cause a failure in any other door circuit. Short circuits or other faults in the alarm or indicator circuits of a door are not to result in a loss of power operation of the door. Arrangements are to be such that leakage of water into the electrical equipment located below the vertical limit of watertight integrity will not cause the door to open.

6.1.6 The enclosures of electrical components necessarily situated below the vertical limit of watertight integrity are to provide suitable protection against the ingress of water with ratings as defined in IEC 60529: *Degrees of protection provided by enclosures (IP Code)* or an acceptable and relevant National Standard, as follows:

(a) Electrical motors, associated circuits and control components, protected to IPX7 standard.

(b) Door position indicators and associated circuit components protected to IPX8 standard, where the water pressure testing of the enclosures is to be based on the pressure that may occur at the location of the component during flooding for a period of 36 hours.

(c) Door movement warning signals, protected to IPX6 standard.

6.1.7 Watertight door electrical controls including their electric cables are to be kept as close as is practicable to the bulkhead in which the doors are fitted and so arranged that the likelihood of them being involved in any damage which the ship may sustain is minimised.

6.1.8 An audible alarm, distinct from any other alarm in the area, is to sound whenever the door is closed remotely by power and sound for at least five seconds but no more than ten seconds before the door begins to move and is to continue sounding until the door is completely closed. The audible alarm is to be supplemented by an intermittent, highly visible, visual signal at the door.

6.1.9 The door is to have, as far as is practically achievable, a uniform rate of closure under power. The closure time, from the time the door begins to move to the time it reaches the completely closed position, shall in no case be less than 20 seconds or more than 40 seconds with the ship in the upright position.

6.1.10 Sliding watertight doors are to be capable of being remotely closed from the navigation bridge and are also to be operable locally from each side of the bulkhead. Indicators are to be provided at the respective control positions showing whether the doors are open or closed, and an audible alarm and intermittent visual signal is to be provided at the door closure.

6.1.11 A central operating console is to be fitted on the navigation bridge or main machinery control station and is to be provided with a 'master-mode' switch having:

(a) an 'in port' mode, which is to allow any door to be locally opened and locally closed after use without automatic closure; and

(b) an 'at sea' mode, which is to allow any door that is opened to be automatically closed whilst still permitting any doors to be locally opened but with automatic reclosure upon release of the local control mechanism.

6.1.12 The 'master-mode' switch is to be arranged to be normally in the 'at sea' mode position, be clearly marked as to its function, and be Type Approved in accordance with LR's Procedure for Type Approved Products.

6.1.13 The central operating console is to be provided with a diagram showing the location of each door, with visual indicators to show whether each door is open or closed. A red light is to indicate a door is fully open and a green light a door fully closed. When the door is closed remotely, a red light is to indicate the intermediate position by flashing. The indicating circuit is to be independent of the control circuit for each door.

6.1.14 The arrangements are to be such that it is not possible to remotely open any door from the central operating console.

6.1.15 The requirements of *Vol 2, Pt 9, Ch 9, 6.1 Watertight doors 6.1.1-6.1.14* shall be applied to any electrically controlled, actuated door or hatch forming part of a watertight subdivision boundary.

6.2 Bow, stern and shell doors, loading doors and other closing appliances

6.2.1 Where it is required by *Vol 1, Pt 4, Ch 3 Special Features* that indicators be provided for bow, stern and shell doors, loading doors, and other closing appliances which are intended to ensure the watertight integrity of the ships structure in which they are located, the indicator system is to be designed on the fail-safe principle. The system is to indicate if any of the doors or closing appliances are open or are not fully closed and secured.

6.2.2 Where such doors and appliances are to be operated at sea, the requirements of *Vol 2, Pt 9, Ch 9, 6.1 Watertight doors* are to be complied with as far as is practicable.

6.2.3 The electrical power supply for the indicator system is to be independent of any electrical power supply for operating and securing the doors.

6.3 Flooding detection systems

6.3.1 A flooding detection system is to be fitted for watertight spaces below the damage control deck that:
(a) have a volume, in cubic metres, that is more than the ship's moulded displacement per centimetre immersion at deepest scantling draught; or
(b) have a volume more than 30 cubic metres, whichever is the greater.

6.3.2 Any watertight spaces that are individually equipped with a liquid level monitoring system (such as fresh water, ballast water, fuel, etc.), including an indicator panel or other means of monitoring at the bridge, or ships command centre are excluded from the requirements of this sub-Section.

6.3.3 The number and location of flooding detection sensors is to be sufficient to ensure that any substantial water ingress into a watertight space requiring a flooding detection system is detected within operational angles of trim and heel. To accomplish this, flooding detection sensors are to be installed as indicated below:
(a) Vertical location – sensors are to be installed as low as practical in the watertight space;
(b) Longitudinal location – in watertight spaces located forward of the mid-length sensors are generally to be installed at the forward end of the space. In watertight spaces located aft of the mid-length, sensors are generally to be installed at the aft end of the space. For watertight spaces located in the vicinity of the mid-length, consideration is to be given to the appropriate longitudinal location of the sensor. In addition, any watertight space of length more than 20 per cent of the ship's subdivision length or with arrangements that would seriously restrict the longitudinal flow of water is to be provided with sensors at both the forward and aft ends; and
(c) Transverse location – sensors are generally to be installed at the centreline of the space (or alternatively at both the port and starboard sides). In addition, any watertight space that extends the full breadth of the ship or with arrangements that would seriously restrict the transverse flow of water is to be provided with sensors at both the port and starboard sides.

6.3.4 Where a watertight space extends in height over more than one deck, there is to be at least one flooding detection sensor at each deck level. This provision is not applicable in cases where a continuous flood level monitoring system is installed.

6.3.5 Consideration may be given to the number and location of flooding detection sensors in watertight spaces with unusual arrangements or in other cases where these requirements would not achieve the intended purpose.

6.3.6 Each flooding detection system is to give an audible and visual alarm at the navigation bridge and the main machinery control station, if located in a separate space from the navigation bridge. These alarms are to indicate which watertight space is flooding. For watertight spaces with unusual arrangements consideration should be given to providing separate indications for different areas of the compartment.

6.3.7 The alarm system is to conform to the requirements of *Vol 2, Pt 9, Ch 7 Control, Alerts and Safety Systems*.

6.3.8 Sensor cabling and junction boxes are to be suitably rated and protected to ensure operability of the detection system in a flooded condition.

6.3.9 Flooding detection system sensors and equipment are to be installed where they are accessible for testing, maintenance and repair.

6.3.10 Flooding detection sensors shall be protected from mechanical and physical damage. Protective guards shall be provided if sensors are in a located in a vulnerable position where damage could occur. The guards shall not impair the operation of the sensor.

6.3.11 The flooding detection system is to be capable of being functionally tested using either direct or indirect methods.

Volume 2, Part 12, Chapter 1
Emissions Abatement Plant for Combustion Machinery

■ *Section 10*
Storage and use of chemicals

10.1 Reductants used for selective catalytic reduction (SCR)

10.1.10 ~~Piping systems, tanks and other components which will come into contact with the urea solution are to be of a suitable grade of non-combustible compatible material established to be suitable for the application.~~ Reductant tanks are to be of steel or other equivalent material with a melting point above 925°C.
Pipes/piping systems are to be of steel or other equivalent material with melting point above 925°C, except downstream of the tank valve, provided this valve is metal seated and, in the event of fire, is arranged as fail-to-closed or equipped with quick closing facilities at a safe position outside the space. In such cases, type approved plastic piping may be accepted even if it has not passed a fire endurance test. Reductant tanks and pipes/piping systems are to be made with a material compatible with reductant or coated with appropriate anti-corrosion coating.

10.1.11 Where storage tanks are installed in closed compartments, the compartments are to be served by an effective extraction type mechanical ventilation system capable of providing not less than six air changes per hour, which is independent from the ventilation system of accommodation, service spaces or control stations.

10.1.12 The ventilation system is to be capable of being controlled from outside the compartment and is to be in continuous operation except when the storage tank is empty and has been thoroughly ~~air purged~~ ventilated. A warning notice requiring the use of such ventilation before entering the compartment shall be provided outside the compartment adjacent to teach point of entry.

10.1.13 The requirements to the ventilation system specified in this paragraph and above paragraph *Vol 2, Pt 12, Ch 1, 10.1 Reductants used for selective catalytic reduction (SCR) 10.1.11* also apply to the following closed compartments normally entered by persons:

- When such closed compartments are adjacent to the integral urea tanks and there are possible leakage points (e.g. manholes, fittings) from these tanks;
- When the chemical piping systems pass through such compartments, unless the piping system is made of steel or other equivalent material with a melting point above 925°C.

Existing paragraph 10.1.13 has been renumbered to 10.1.14.

~~10.1.14~~ 10.1.15 The storage tanks are to be arranged so that they can be emptied~~, purged~~ and ~~vented~~ ventilated by means of portable or permanent systems. The drainage arrangements are to be independent of drainage arrangements of other systems and shall be capable of draining to a dedicated tank.

~~10.1.15~~ 10.1.16 Where a storage tank is located within an engine room, a separate ventilation system defined in *Vol 2, Pt 12, Ch 1, 10.1 Reductants used for selective catalytic reduction (SCR) 10.1.8* is not required when the general ventilation system for the space is arranged so as to provide an effective movement of air in the vicinity of the storage tank, and is to be maintained in operation continuously except when the storage tank is empty and has been thoroughly ~~air purged~~ ventilated.

Existing paragraphs 10.1.16 and 10.1.17 have been renumbered to 10.1.17 and 10.1.18.

~~10.1.18~~ 10.1.19 For the protection of crew members, the ship is to have suitable personnel protective equipment on board. Eyewash stations ~~and safety showers~~ are to be provided in locations where chemical contact is most likely to occur. The location (e.g. near storage tank, loading area etc.) and number of these eyewash stations ~~and safety showers are~~ is to be derived from the detailed installation arrangements.

Existing paragraphs 10.1.19 to 10.1.25 have been renumbered to 10.1.20 to 10.1.27.

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